

**DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(MPDES)**

Statement of Basis

Permittee:	City of Choteau
Permit No.:	MT0020052
Receiving Water:	Unnamed man-made ditch
Facility Information:	Choteau Wastewater Treatment Facility
Mailing Address:	38 1 st Ave NW Choteau, MT 59422
Contact:	Kelly Hirsch, Public Works Director
Telephone:	(406) 466-2510
Fee Information:	
Type:	Minor Publicly Owned Treatment Works
Number of Outfalls:	1 (for fee determination purposes)
Type of Outfall:	001 – Facility Discharge

I. Permit Status

The Montana Pollutant Discharge Elimination System (MPDES) permit for the City of Choteau (City) Wastewater Treatment Facility (WWTF) was issued on September 7, 2005, became effective on October 1, 2005, and expires on September 30, 2010. The Department received a letter from the City on December 22, 2008, requesting a major modification of the MPDES permit, to change the effective date of final pathogen limits for Outfall 001 from January 1, 2010, to January 1, 2012.

The City has committed to a comprehensive upgrade of its wastewater collection system and treatment facilities in two phases (HKM Preliminary Engineering Report, May 2008) [HKM]. Phase 1 includes additional infiltration reduction in the collection system and construction of an ultraviolet light (UV) disinfection system to treat the WWTF effluent to achieve compliance with the final pathogen limits of the current MPDES permit. The City has received preliminary

funding commitments for Phase 1, but final approval from the 2009 Legislature is required for a significant part of the funding and award of those funds are not anticipated until July of 2009. Commencement of construction of Phase 1 is estimated to be May of 2010 with completion of construction in July of 2010. The UV disinfection system is scheduled to be operational in July of 2010.

Effective February 1, 2006, the Montana water quality standards were amended to mandate using *Escherichia coli* (*E. coli*) as a pathogen indicator bacteria species instead of the historic pathogen indicator species, fecal coliform bacteria. Since the permit will be opened for the City's requested modification, the permit will also be modified to reflect current effluent limits for and monitoring of *E. coli*.

ARM 17.30.1365(4)(b) requires that in a permit modification, only those conditions to be modified may be reopened when a new draft permit is prepared. Accordingly, the scope of this permit modification is limited to only: amendment of end date of interim limits for Outfall 001 [Section I(B)(1)], amendment of the effective date of final pathogen limits for Outfall 001 [Section I(B)(2)], amendment of the compliance schedule for final pathogen limits and disinfection [Section I(F)], amendment of pathogen indicator bacteria limits from fecal coliform to *E. coli* [Section I(B)(2)], and amendment of monitoring requirements to change from fecal coliform bacteria to *E. coli* bacteria [Section I(C)].

II. Facility Information

Current Facilities:

The Choteau WWTF serves the City of Choteau, with a current population of approximately 1,780 people. The existing WWTF is a single cell facultative lagoon with a total surface area of 27 acres constructed in 1954. A 1975 Facility Plan indicated that the design flow of the lagoon was 0.30 million gallons per day (mgd).

Discharge from the facility was continuous in 2007 and 2008, except for no discharge in August and September 2007. Effluent is discharged from a pipe on the southeastern corner and it then flows through a Parshall flume at approximately 47°47'54" N latitude, 112°10'42" W longitude. The facility does not currently have the capability to disinfect. Discharge is to an unnamed man-made ditch that enters the Teton River approximately 1,760 feet south of the lagoon. The ditch is state waters.

The current facultative lagoon is hydraulically overloaded because of excessive infiltration into the wastewater collection system, experiences short circuiting and has problematic accumulations of sludge. Influent flow studies during June 2007 measured average daily influent flows of 0.62 mgd [HKM]. Existing permit compliance schedules require the City to (1) address the infiltration problem in order to reduce raw wastewater flows to levels that can be treated in a cost effective and efficient manner and (2) provide disinfection to the effluent to meet final

pathogen effluent limits. The existing permit requires compliance with final pathogen effluent limits by January 1, 2010.

Upgraded Facilities:

The WWTF is scheduled to be upgraded in two phases. Phase 1 includes infiltration reduction by replacement of approximately 2,800 feet of sewer main and construction of a UV disinfection system to treat the lagoon effluent. In addition, although not formally part of Phase 1, the City has expressed an intention to purchase and install three solar mixers in the lagoon to improve circulation, thereby reducing short circuiting, which should improve effluent quality until Phase 2 improvements are completed. The reported installed cost of the solar mixers is approximately \$100,000 [HKM].

Phase 2 includes replacement of the wastewater treatment process and is dependent on successful reduction of infiltration to reasonable levels. Based on estimated infiltration reduction, the apparent best alternative at a design flow of 0.40 mgd is a mechanical oxidation ditch to replace the facultative lagoon, along with utilization of the UV disinfection system constructed in Phase 1. Based on actual infiltration reduction realized with Phase 1, the selected alternative could need to be reconsidered [HKM].

This permit modification is limited in scope to the following:

- Amend the end date of interim limits to September 29, 2010.
- Amend the effective date of final pathogen limits to September 30, 2010.
- Amend the compliance schedule (Section I(F) of the permit) to set a date of September 30, 2010, for meeting of final pathogen limits.
- Replace fecal coliform limits with comparable *E. coli* limits as final effluent limits.
- In effluent monitoring requirements, replace fecal coliform with *E. coli* as the pathogen indicator bacteria.

III. Technology-based Effluent Limits (TBELs)

a. Applicability to Technology-based Limitations

The permit establishes interim and final limits that are based on the National Secondary Treatment Standards for five-day biochemical oxygen demand (BOD₅), percent removal of BOD₅, total suspended solids (TSS), percent removal of TSS, and pH. These limits will not be affected by the permit modification.

b. Nondegradation Allocated Loads

Nondegradation allocated loads were determined under previous permitting actions for BOD₅, TSS, total nitrogen and total phosphorous. The permit modification will not affect nondegradation allocated loads.

IV. Water Quality-based Effluent Limitations (WQBELs)

ARM 17.30.1345 requires WQBELs to be developed for any pollutant for which there is reasonable potential for discharges to cause or contribute to exceedences of instream water quality standards.

The permit establishes final limitations effective January 1, 2010 on fecal coliform bacteria and total residual chlorine. The maximum total residual chlorine limitations apply if chlorination is used for disinfection and remains unchanged. The permit modification will move back the effective date for final pathogen limits to September 30, 2010. The pathogen indicator bacteria final limits will be changed from fecal coliform to *E. coli* to comply with Montana water quality standards that became effective on February 1, 2006. The 30-day geometric mean limit on *E. coli* of 126 colony forming units (cfu) per 100 milliliters (mL) correlates closely with the current permit final limit of 200 colonies per 100 mL for fecal coliform bacteria [Feldman, DEQ].

The applicable effluent limitations for *E. coli* are:

- April 1 through October 31, of each year, the geometric mean number of *E. coli* may not exceed 126 colony forming units per 100 mL and 10% of the total samples may not exceed 252 colony forming units per 100 mL during any 30-day period [ARM 17.30.623(2)(a)(i)]; and
- November 1 through March 31, the geometric mean number of *E. coli* may not exceed 630 colony forming units per 100 mL and 10% of the samples may not exceed 1,260 colony forming units per 100 mL during any 30-day period [ARM 17.30.623(2)(a)(ii)].

Nearly instantaneous mixing is assumed in accordance with ARM 17.30.516(3)(d), resulting in effluent limitations applying at the end-of-pipe at the point of discharge.

On September 21, 2000, a U.S. District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new permits or increases under the MPDES program. The order was issued in the Friends of the Wild Swan v. U.S. EPA, et. al. (CV 97-35-M-DWM), District of Montana and Missoula Division. The Department finds that issuance of this permit modification does not conflict with Judge Molloy's Order (CV 97-35-M-DWM) because the unnamed man-made ditch is not 303(d)listed. The downstream reach is listed for TSS but the permit modification does not impact TSS.

V. Final Effluent Limitations

Effective September 30, 2010 and lasting through the duration of this permit, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below:

Final Effluent Limits				
Parameter	Units	Average Monthly Limit ¹	Average Weekly Limit ¹	Maximum Daily Limit
Biochemical Oxygen Demand (BOD ₅)	mg/L	30	45	--
	lbs/day	75	113	--
Total Suspended Solids (TSS)	mg/L	30	45	--
	lbs/day	75	113	--
<i>Escherichia coli</i> (<i>E. coli</i>) ^{2, 4}	cfu/100ml	126	--	252
<i>Escherichia coli</i> (<i>E. coli</i>) ^{3, 4}	cfu/100ml	630	--	1,260
Total Residual Chlorine ⁵	mg/L	0.011	0.019	0.011
Footnotes:				
1. See Definition section at end of permit for explanation of terms.				
2. This limitation applies from April 1 through October 31.				
3. This limitation applies from November 1 through March 31.				
4. Report Geometric Mean if more than one sample is collected in the reporting period.				
5. The Permittee will be in compliance with the applicable effluent limitation if the total residual chlorine does not exceed the minimal level (mL) of 0.1 mg/L.				

VI. Self Monitoring Requirements

Effective on the modified date of MT0020052, *E. coli* monitoring will replace fecal coliform monitoring of the effluent. Sample frequency is 1/week, sample type is grab and results shall be reported in colony forming units (cfu) per 100 ml. All other self monitoring requirements of the permit issued September 7, 2005 will remain fully effective and are unchanged by this modification.

VII. Compliance Schedules

The current MPDES permit contains compliance schedules for meeting final effluent limits for pathogens and for addressing excessive infiltration/inflow in the wastewater collection system. This modification only affects the date for meeting final pathogen limits and all other compliance schedule requirements and dates remain unchanged and fully in effect.

The City requested that the current MPDES permit be modified to change the effective date of final pathogen limits from January 1, 2010, to January 1, 2012. The Department proposes to modify the effective date of final pathogen limits to September 30, 2010, which is the expiration date of the current permit. Commencement of construction of the UV disinfection system is estimated to be May of 2010, with completion of construction and achievement of operational status expected in July of 2010. A date of September 30, 2010 for compliance with final pathogen effluent limits is reasonable and realistic considering the construction schedule and technology associated with UV disinfection. The Department would be unable to extend the date for compliance beyond the expiration date of the current MPDES permit without revoking and reissuing the permit.

The compliance schedule [Section I(F)] relating to **Pathogen Limits and Disinfection**, will be amended as follows to set a date of September 30, 2010, for meeting of final pathogen limits:

Items 1. through 3. remain unchanged.

4. September 30, 2010, final effluent limits for pathogens (*E. coli*) will be in effect.

The compliance schedule [Section I(F)] relating to **Excessive Infiltration and Inflow (I/I)** remains unchanged.

VIII. Information Sources

- 1) Federal Clean Water Act (CWA), 33 U.S.C. 1251, *et seq.*
- 2) Montana Water Quality Act, Montana Code Annotated 75-5-101, *et seq.*
- 3) Permit Application, Degradation Authorization, and Annual Fees, Administrative Rules of Montana (ARM) 17.30.201
- 4) Mixing Zones in Surface and Ground Water, ARM 17.30.5, *et seq.*
- 5) Montana Surface Water Quality Standards and Procedures, ARM 17.30.6, *et seq.*
- 6) Nondegradation of Water Quality, ARM 17.30.7, *et seq.*
- 7) Montana Pollutant Discharge Elimination System (MPDES), ARM 17.30.12-13, *et seq.*
- 8) Department of Environmental Quality Circular DEQ-7, Montana Numeric Water Quality Standards
- 9) US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136
- 10) MPDES Permit Number MT-0020052, Issued on September 7, 2005
- 11) David Feldman, DEQ, Basis For Rule Change, April 21, 2005

Prepared by: James F. Brown, February 2009